

Abstract

Calculation of Elasticity and Plasticity of Microcrystalline Cellulose Ceolus KG 802

Mgr. Michaela Filipčíková, 2007

Microcrystalline cellulose is an important pharmaceutical excipient. Ceolus KG 802 is one type of microcrystalline cellulose, which reduces addition amount of pharmaceutical powders. It also facilitates tableting of pressure – sensitive drugs such as enzymes, antibiotics etc.

The aim of this Rigorous thesis was the calculation of elasticity and plasticity of microcrystalline cellulose Ceolus KG 802. The plasticity was determined from graphs showing the decreasing trend of force on the time. We used three methods. First one was based on identification of maximum and minimum forces, second used „one-parameter“ evaluation of curve from graphs showing the relation of the force to the time and third „three-parameter“ evaluation of these curves. We also determined Young’s modulus which characterizes elasticity of system and equals 100,0287 MPa.

We were able to distinguish two sections of the curve from graphs showing the relation of the plasticity to the compression force. These sections characterize particular phases of compression and changes of system. We distinguished phase of precompression, then phase of elastic and plastic deformation. This rigorous thesis deals with confrontation of plasticity of Ceolus KG 802, Avicel PH 102 and Avicel PH 103 as well. We confirmed the influence of different type of microcrystalline cellulose on the plasticity of tablets.